A Method for the Quantification of Nanoparticle Dispersion in Nanocomposites Based on Fractal Dimension

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Abstract Dispersion quantification provides critical insight and towards understanding and improving the influence of nanoparticle dispersion on the behaviour of the nanocomposite at macro and nanoscale level. This study was precipitated by the limitations of most methods for quantifying dispersion to sufficiently handle issues regarding scalability, complexity, consistency and versatility. A quantity ($\mathbf{D_0}$) based on the variance of the fractal dimension was used to quantify dispersion successfully. The concept was validated using real microscopy images. The approach is simple and versatile to implement.

Keywords Dispersion · Fractal dimension · Variance · Nanocomposites · Nanoparticles

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M. Awang et al. (eds.), *Advances in Material Sciences and Engineering*, Lecture Notes in Mechanical Engineering, https://doi.org/10.1007/978-981-13-8297-0_57